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XP - N1993-099742

AB - JP05068459 Volatile chemicals are forcibly dispersed by a fan, partic.  
under heating.

- Pref., volatile chemicals and additives e.g. antioxidants, enhancers,  
deodorant and flavours, are adsorbed in a medium e.g. pulp, cloth,  
sponge, active charcoal, synthetic fibres and polymers, and attached  
to a fan. The fan is rotated with a motor powered by a dry cell and  
may be heated to 20-100 deg.C for efficient vaporisation.

- USE/ADVANTAGE - Used for dispersion of volatile chemicals e.g.  
insecticides, antimicrobial agents, repellents, flavours and medicines.

- In an example, a fan having four blades of 2.5 cm dia. and 1.8 g was  
made of a kneaded mixt. of PVC contg. 10 wt.%  
1-ethynyl-2-methyl-2-pentenyl (1R)-cis,trans crysanthemate. The fan  
was fitted to a motor driven fan and rotated at 2,100 rpm. The 90%  
knockdown time (KT90) was 40 min., while control gp. without rotation  
of fan gave KT90 of 300-330 minins

- (Dwg.0/0)

CN - R00338-M R00338-Q R03500-M

IW - DISPERSE VOLATILE CHEMICAL FAN DISPERSE INSECT ANTIMICROBIAL AGENT  
REPEL FLAVOUR MEDICINE

IKW - DISPERSE VOLATILE CHEMICAL FAN DISPERSE INSECT ANTIMICROBIAL AGENT  
REPEL FLAVOUR MEDICINE

NC - 001

OPD - 1991-07-12

ORD - 1993-03-23

PAW - (EART ) EARTH SEIYAKU KK

**TI - Dispersing volatile chemicals using fan - used to disperse  
insecticides, antimicrobial agents, repellents, flavours and medicines**

## \* NOTICES \*

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3. In the drawings, any words are not translated.

## DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] Vaporization effectiveness of this invention is high and it relates to the drugs diffusion material used for the diffusion approach of vaporization nature drugs and it which can make [ many ] the amount of vaporization.

[0002]

[Description of the Prior Art] in making a predetermined location diffuse vaporization nature drugs conventionally, the support holding vaporization nature drugs or it is usually installed in a predetermined location, and vaporization by diffusion is only carried out -- \*\*\*\*, although remained. Then, since time amount is taken, the support holding vaporization nature drugs is heated, or air is blown off with a blower and the method of vaporizing said drugs compulsorily is learned by applying it to the support holding vaporization nature drugs to be spread early.

[0003]

[Problem(s) to be Solved by the Invention] Since a wind force was small and the force which promotes vaporization-ization of the drugs from said support was small even if it contacts, in vaporizing compulsorily the drugs held at support with the aforementioned blower probably because the sent wind does not fully contact the support holding vaporization nature drugs, or since the wind is weak, diffusion of the drugs which may be satisfied enough was not performed.

[0004] This invention aims at offering the drugs diffusion material which supported the method of performing vaporization of said drugs sufficiently good, and the drugs for it rather than the case where vaporization nature drugs are compulsorily vaporized by the ventilation by such blower.

[0005]

[Means for Solving the Problem] When this invention made the vaporization material holding vaporization nature drugs drive, it was made by finding out that the vaporization increases remarkably, and attained the above-mentioned purpose with the following means.

(1) The diffusion approach of the vaporization nature drugs characterized by diffusing vaporization nature drugs in mind by driving the diffusion material holding vaporization nature drugs by the driving means.

[0006] (2) The diffusion approach of the vaporization nature drugs given [ aforementioned ] in (1) term characterized by heating the air introduced into said diffusion material and/or it.

(3) Drugs diffusion material for diffusing vaporization nature drugs in mind by drive characterized by making vaporization nature drugs hold on the interior and/or its front face.

As vaporization nature drugs used in this invention, various kinds of drugs currently conventionally used for the purpose, such as an extermination-of-harmful-insects agent (an insecticide, miticide), a germicide, a repellent, aromatics (a perfume, herb, etc.), and drugs (drugs for inhalation, such as tracheae, such as menthol and eucalyptus oil, and cold), can be used. The following are mentioned as typical drugs.

[0007] (I) An insecticide, miticide (1) pyrethroid system drugs, and dl-3-allyl compound - 2-methyl-4-

oxo--2-cyclo pentenyl dl-cis- / transformer-chrysanthemate (generic-name allethrin: trade name PINAMIN)

- dl-3-allyl compound - 2-methyl-4-oxo--2-cyclo pentenyl d-cis- / transformer-chrysanthemate (trade-name PINAMIN Town & Country: call it "PINAMIN Town & Country" the Sumitomo Chemical Co., Ltd. make and the following)

[0008] - dl-3-allyl compound - 2-methyl-4-oxo--2-cyclo pentenyl d-transformer-chrysanthemate (trade-name biotechnology allethrin: product made from YUKURAFU)

- d-3-allyl compound - 2-methyl-4-oxo--2-cyclo pentenyl d-transformer-chrysanthemate (trade-name extractives phosphorus: Sumitomo Chemical Co., Ltd. make)

- 1, 3, 4, 5, 6, 7-hexahydro -1, 3-dioxo-2-indolyl methyl dl-cis- / transformer-chrysanthemate (generic-name free-wheel-plate RUSURIN: call it "neo PINAMIN" trade name neo PINAMIN and the following)

[0009] - 1, 3, 4, 5, 6, 7-hexahydro -1, 3-dioxo-2-indolyl methyl d-cis- / transformer-chrysanthemate (trade name: neo PINAMIN Town & Country : Sumitomo Chemical Co., Ltd. make)

- 5-benzyl-3-furil methyl d-cis- / transformer-chrysanthemate (generic-name RESUME thorin, trade-name Chris Ron Town & Country: call it "Chris Ron Town & Country" the Sumitomo Chemical Co., Ltd. make and the following)

[0010] - 3-phenoxy benzyl-dl-cis- / transformer-3-(2 and 2-dichloro vinyl)-2, and 2-dimethyl-1-cyclopropane carboxylate (generic-name permethrin, trade-name EKUSUMIN: Sumitomo Chemical Co., Ltd.)

- 3-phenoxy benzyl-d-cis- / transformer-chrysanthemate (generic name FENO thorin: -- trade name Smith Lynne: -- it is called "Smith Lynne" Sumitomo Chemical Co., Ltd. and the following)

- alpha-cyano-3-phenoxy benzyl 2-(4-chlorophenyl)-3-methyl butyrate (generic name fenvalerate)

[0011] - alpha-cyano-3-phenoxy benzyl Cis- one/transformer - 2, 2, 3, and 3-tetramethyl SHIKUROPURO propane carboxylate (it is called "Foehn proper thorin" generic name Foehn proper thorin and the following)

- 1-ethynyl-2-methyl-2-pentenyl dl-cis- / transformer-chrysanthemate (it is called "em penny phosphorus" generic name em penny phosphorus and the following)

- 2, 3, 4, 5, 6-pentafluoro benzyl-dl-cis- / transformer 3-(2 and 2-dichloro vinyl)-2 and 2-dimethyl-1-cyclopropane carboxylate (it is called "FENFURUSURIN" generic name FENFURUSURIN and the following)

[0012] - 1-ethynyl-2-methyl-2-pentenyl dl-cis- / transformer-3-(2 and 2-dichloro vinyl)-2, and 2-dimethyl-1-cyclopropane carboxylate (henceforth "M-108C")

- 1-ethynyl-2-methyl-2-pentenyl Cis- one/transformer - 2, 2, 3, and 3-tetramethyl-1-cyclopropane carboxylate (henceforth "M-108B")

[0013] - (+)-2-methyl-4-oxo--3-(2-propynyl)-2-cyclo pentenyl (+)-cis- / transformer-chrysanthemate (trade-name ETOKKU: Sumitomo Chemical Co., Ltd.)

- d-transformer - 2, 3, 5, 6-tetrafluoro benzyl-3-(2 and 2-dichloro vinyl)-2, and 2-dimethyl-1-cyclopropane carboxylate (generic name BENFURUSURIN)

[0014] - 2, 3, 5, 6-tetrafluoro-4-methylbenzyl-3-(2-chloro - 3, 3, and 3-trifluoro-1-propenyl)-2, and 2-dimethyl-1-cyclopropane carboxylate (generic name tefluthrin)

- (\*\*) alpha-cyano-3-phenoxy benzyl (+)-cis- / transformer-chrysanthemate (trade-name GOKIRATO: Sumitomo Chemical Co., Ltd.)

[0015] (2) Organic phosphorus system drugs andO, and O-dimethyl O-(2 and 2-dichloro) vinyl phosphate (henceforth "DDVP")

- O and O-dimethyl O-(3-methyl-4-nitrophenyl) thionophosphate andO, and O-diethyl O-2 - Isopropyl-4-methyl-pyrimidyl-(6)-thio phosphate andO, and O-dimethyl S -(1, 2-dicarboethoxyethyl)-

Dithiophosphate [0016] (3) Carver mate system drugs and O-isopropoxy phenyl Methyl carver mate (henceforth "BAIGON")

[0017] (4) Other drugs and benzyl benzoate ISOBONIRU thio cyano acetate (henceforth "IBTA")

- A dehydroacetic acid and piperonyl butoxide (henceforth "P. B.")

- Parahydroxybenzoic acid, a phenyl salicylate, S-421, and cinepyrine 222 (trademark) (N-(2-ethylhexyl)- the bicyclo [2, 2, 1]-hepta--5-en -2, 3-dicarboxyimide)
- N and N-diethyl-m-torr amide (henceforth a "date")
- 5-methoxy-3-(0-methoxypheny)- 1, 3, and 4-OKISA diazole-2(3H)-ON (generic-name methoxadiazon, trade-name EREMIKKU: Sumitomo Chemical Co., Ltd. make)
- [0018] (II) A germicide, S-n-butyl-S'-p-tertiary butyl benzyl N-3-pyridyl imide dithio carbonate (trade-name DIN mart: call it the "DIN mart" the Sumitomo Chemical Co., Ltd. make and the following)
- N-(3' and 5'-dichlorophenyl)-1, 2-dimethyl-cyclopropane-dicarboxyimide (trade-name Sumi Rex: call it "Sumi Rex" the Sumitomo Chemical Co., Ltd. make and the following)
- Perillaldehyde allylisothiacyanate parachlorometaxylenol (henceforth "PCMX")
- [0019] (III) Repellent and N, and N-diethyl m-torr amide (henceforth a "date")
- Di-n-butyl Succinate (henceforth "DNBS")
- G n-propyl Iso SHINKOMERONETO (henceforth "DPIC")

In addition, since some which are used as miticide have the component of the effect enhancement agent which a classification of the above-mentioned drugs has some for which an insecticide is used as miticide based on the main drug effect, and carries out a postscript and these drugs change by the purpose of use, the upper classification is a thing on expedient.

[0020] Various additives, such as an antioxidant usually used for the above-mentioned insecticide used in this invention, an effect enhancement agent, a rate improver of vaporization, a deodorant, and perfume, can be added to arbitration. as an effect enhancement agent -- piperonyl butoxide, N-propyl IZOMU, cinepyrine 222 (trademark), cinepyrine 500, Lee Seng 384, IBTA, and S-421 grade -- as a rate improver of vaporization, lauryl acid methacrylate (LMA) etc. is mentioned as a deodorant, and phenethyl isothiocyanate, high mix acid dimethyl, etc. are mentioned for a citral, citronellal, an anethole, etc. as perfume, respectively.

[0021] And although the location which can exterminate a noxious insect using an extermination-of-harmful-insects agent does not receive a limit at all, its location divided as desirable fixed space is desirable. For example, there are a house, a vinyl house, a septic tank, etc. and the noxious insect which lives there is applicable. Within a biting midge, a fly, a mosquito, Acari, and a septic tank, Psychodidae, a mosquito, etc. are illustrated in a house in clothing noxious insects, such as a clothes moth, KOIGA, and a carpet beetle, the noxious insect which affects the crops currently grown there into a vinyl house, and \*\*\*\*\* in a fly, a mosquito, a cockroach, a house dust mite and the unpleasant noxious insect that carries out involvement, and a wardrobe.

[0022] What is necessary is for what kind of thing to be used as long as it is the configuration which diffuses vaporization nature drugs well in the case of the drive as a configuration of the diffusion material of the drugs used for the diffusion approach of the vaporization nature drugs of this invention, and just to carry out the operation which disturbs the air around this \*\* by drive at least, or disturbs the boundary layer of air, and promotes diffusion of drugs. It may be the semantics of there being some which have the blade of a blower as what has the large operation which disturbs air among these configurations, for example, a thing like a fan, and having the operation which disturbs air when using rotation as a driving means although it is desirable using these, and the thing of the configuration of a disk without a ventilation operation may be used. Moreover, when using vibration as a driving means, since the configuration of diffusion material has only to vibrate, it may be monotonous or may be a sheet-like object again. A fan is the most desirable at the point of having a ventilation operation in these configurations. Hereafter, a fan is explained in detail.

[0023] as a fan's configuration -- not only the shape of the shape of a screw, and a propeller but a plate, and a hydraulic turbine -- there are a mold, a rotary fan mold, etc. When making a big ventilation operation perform, the shape of the shape of a screw and a propeller etc. may be good, and although there is an advantage which can enlarge the amount of vaporization by ventilation, when it does not need to be accompanied by ventilation operation, the disk which can perform rotation of extent which produces airstream around is sufficient. Although it changes about a fan's configuration even if it responds to the maintenance approach of the drugs to a fan, about the maintenance approach of the

drugs, it mentions later. For example, in taking the method which puts in drugs for the interior of a fan in a cavity, it considers as the configuration which can form the cavity.

[0024] Moreover, in order to increase the air content in contact with a fan, opening can be prepared in each blade which forms a fan. For example, drugs can be efficiently transpired by preparing much openings in a blade. As a configuration of the opening, various forms, such as the shape of the shape of a grid and a honeycomb, can be taken to mesh-like outside, and, as for the opening, preparing if possible at homogeneity is desirable. Although the configuration of the blade which constitutes a fan is decided by a fan's above mentioned configuration, the thing of the shape of hollow instead of tabular [ mere ] is sufficient as it. The thickness of a blade should just have the thickness which has the amount of maintenance of extent which can give sufficient amount of vaporization, when the ingredient which constitutes it is a thing containing vaporization nature drugs, but since drugs do not diffuse it to a front face even if it is not much thick and it becomes useless, it chooses suitable thickness. As for each blade which constitutes a fan, it is desirable to enable it to maintain the balance under rotation as similarly [ weight and air resistance ] as possible.

[0025] When it is the thing of the configuration in which a fan has a blade, you may be the thing of the structure which the blade itself can detach and attach freely due to the maintenance method of the vaporization nature drugs mentioned later. One example of the rotary fan mold which is used by this invention and which is one format of a fan is shown in drawing 1 -3. Drawing 1 is the perspective view of the fan 1 for drugs diffusion holding the drugs bag 7 which held vaporization nature drugs in the thin bag of a rotary fan mold (diffusion material), drawing 2 is said fan's top view, and drawing 3 is a perspective view before the assembly of the fan body of drawing 1 .

[0026] The body of the fan of drawing 1 consists of the blade section 2 and a drive applied part 3 so that drawing 3 may show, and the blade section 2 has many perpendicular blades 5, between each blade 5, it is opened and forms opening 6. It has the shank 4 which the drive applied part 3 has a rest 8 in the center as shown in drawing 3 , and is connected with the lower part at a motor (not shown), and the diameter is made into the bore of the blade section 2, and what is slightly small, and said rest 8 is constituted so that it may fit in and support the blade section 2. And the both gap installs the thin drugs bag 7 in the inner circumference side of the blade section 2, as shown in drawing 1 , and when the blade section 2 is fitted into a rest 8, it enables it to support it by pinching the lower limit of the drugs bag 7 in both gap. The fan for drugs diffusion in the condition of having been supported is as being shown in the top view of drawing 2 , and the drugs bag 7 is formed along with the inner circumference side of a blade 2. For this reason, as for the magnitude of the drugs bag 7, it is desirable the die length of the inner circumference of the blade section 2 and height, and that it is an equal mostly. Internal vaporization nature drugs seem, as for the quality of the material of a drugs bag, to vaporize easily through the bag.

[0027] Although the thing of a configuration which was really cast with synthetic resin is used like illustration as the blade section 2 in the fan 1 for drugs diffusion who shows drawing 1 -3 As this blade section 2 may be the thing of an assembly type and it is shown in drawing 4 as that example, it is the rectangular thing built with the comparatively supple quality of the material. The blade section 2 constituted by forming a fastener 9 and hook 10 in both ends is twisted around the perimeter of the rest 8 of the drive applied part 3, hook 10 is hung on a fastener 9, and you may make it form the circular blade section 2.

[0028] If the fan 1 for drugs diffusion who shows drawing 1 -2 is rotated by telling rotation of a motor to a shank 4, a wind will arise with the blade 5 of the blade section 2, and the vaporization nature drugs which came out to the front face of the drugs bag 7 will be diffused well. The configuration of a blade 5 and arrangement in the blade section 2 can take various configurations, in order to receive the diffusion. The number of the fans for drugs diffusion of drawing 1 -4 who explained here is one to the last. Not the bag that contained drugs but the sheet containing drugs is sufficient, and what dedicated drugs in the container may be used, and Moreover, although what formed the blade with the synthetic resin which contains drugs more simply may be used, it is desirable that it is the thing of the configuration or structure where it is not necessary to touch with a direct hand the part which attaches in order to reduce the danger on handling, and sometimes contains drugs.

[0029] When it sees about actual use, if a quite small blower is used to the space of sitting-room extent of the usual house, it is sufficient enough, and it is good preferably as a fan's rotational frequency to use [ 300 or more rpm ] with 500 - 10,000rpm extent. A motor, a spiral spring, etc. can be used as said fan's driving means. Even if it uses the fan of extent who drives by the small motor which runs by a dry cell etc. to the space of above-mentioned sitting-room extent, effect is taken enough.

[0030] There are a method which there are various means, divides vaporization nature drugs roughly as a means made to hold to a fan, and is made to hold directly to (1) fan, and a method made to hold indirectly to (2) fans.

The oil absorption nature ingredient (for example, resin) which mixed with vaporization nature drugs constitutes the (a) fan itself from the method of (1). (b) The internal layer near the whole fan or its front face is constituted from a porous oil absorption nature ingredient. The means made to hold on the fan front face of applying the liquid which can take the means made to hold inside the fan of having infiltrated vaporization nature drugs into the porous oil absorption nature ingredient part, and contains vaporization nature drugs on (c) fan front face can be taken.

[0031] By the method of (2), what enclosed vaporization nature drugs with the (a) fan itself can be made to be able to pinch, or the means of fixing what enclosed vaporization nature drugs with the front face of the (c) fan who makes the piece of an oil absorption nature ingredient which contains or infiltrated vaporization nature drugs into the front face of the (b) fan who makes it contain support can be taken.

What is necessary is to exchange the fan itself and just to supply vaporization nature drugs according to sinking in by the solution in the sinking-in mold of (b) and (c) among the methods of (1), at (a), although it is necessary to supply vaporization nature drugs in order to use it continuously if the vaporization nature drugs made to hold to a fan as mentioned above finish consuming. What is necessary is just to exchange said piece of an oil absorption nature ingredient by (b) that what is necessary is just to exchange that with which (a) and (c) enclosed vaporization nature drugs by the method of (2).

[0032] Moreover, only a fan's blade is constituted from an oil absorption nature ingredient which mixed with vaporization nature drugs, and you may make it exchange it as an alteration of these methods. As what enclosed vaporization nature drugs by the method of (2), it is desirable to use what was enclosed with the container which has the film section which consists vaporization nature drugs or its solution of a gas permeability film at least, or the container which has the micropore which can carry out aeration. Although what has it is mentioned, the thing of other configurations may be used. [ desirable what has that easy a configuration is held on a fan front face as these containers for example, flat ] As a piece of an oil absorption nature ingredient into which vaporization nature drugs are contained or were infiltrated, it is good to carry out [ of tabular, and the shape of a sheet and others ] a configuration.

[0033] As a gas permeability film for enclosing these vaporization nature drugs The ethylene vinyl acetate polymer [trade name D2021 (vinyl acetate 10wt% thing), H2020 (vinyl acetate 15wt% thing), K2013 (vinyl acetate 25wt% thing), D2011(vinyl acetate 5wt% thing) (all are Sumitomo Chemical Co., Ltd. make)], poly dimethylsiloxane, natural rubber, polybutadiene, ethyl cellulose, polychloroprene, etc. are mentioned, and these multilayer films are also used. Although, as for the thickness of this film, the vaporization nature drugs enclosed into it let an effective amount pass through that film, let a superfluous amount be the thing of extent which has a sustained-release operation which it does not let pass. However, it must have sufficient reinforcement from which vaporization nature drugs do not leak. Although the thickness is specifically the case of an ethylene-vinyl acetate polymer film, for example, 100 micrometers, it may be thinner than it or may be thick.

[0034] As the above-mentioned oil absorption nature ingredient, for example Pulp, cloth, a natural fiber (for example, absorbent cotton), Sponge, minerals powder, porcelain, earthenware, activated carbon, glass wool, asbestos, an acrylic oleophilic polymer (product made from Consonance Gasification Study), Acrylic quantity oil absorption nature resin KX-OA 100-600 (NIPPON SHOKUBAI Co., Ltd. make), A polypropylene fiber (trademark tee JINORU soap, product made from Uni-Cel), One sort or the thing combined two or more sorts can be mentioned for a polypropylene fiber nonwoven fabric (a trademark toughness oil blotter, Mitsui Petrochemical Industries, Ltd. make), special liner polymer

(trademark UOSEPPU, Toray Industries, Inc. make), etc. What is necessary is just to use what was suitable for the above-mentioned method among the above-mentioned ingredients, choosing.

[0035] It is desirable to make vaporization nature drugs contain in the range of 100 - 500 mg/g among the oil absorption nature ingredient (for example, resin) which constitutes a fan from (a) of the above-mentioned (1) method. (b) And set up the suitable amount used per a fan's surface area at (c). In (a) of the above-mentioned (2) method, and (c), although especially the amount used does not receive a limit in using vaporization nature drugs as it is since it is the method to enclose, when making that into which the oil absorption nature ingredient was made to contain vaporization nature drugs, or they were infiltrated support that is, in (b), the content etc. presupposes that it is the same as that of the case of the aforementioned (1) method.

[0036] Moreover, the vaporization nature drugs made to hold to a fan cannot vaporize easily due to ordinary temperature, the air which puts a heater on the air installation way of a blower, and contacts a fan can be heated beforehand, or a heater can be placed near a fan and the means of heating a fan's field can be adopted to make [ many ] the amount of vaporization. The heating temperature has effectiveness more sufficient than ordinary temperature with 20-100 degrees C or extent raised more than it. In the case of the strong drugs of vaporization nature, it is required like em penny phosphorus and BENFURUSURIN to raise it to a slight degree by rise of this level in the case of the low drugs of ordinary temperature vaporization nature, since even the rise of about 20-30 degrees C is ineffective although it is effective.

[0037] Furthermore, by adding the thermally conductive matter, for example, aluminium powder, iron powder, etc. to some fans in this case, a fan's temperature rises for a short time, and can make [ many ] the early amount of vaporization. Moreover, this invention can be accepted in the method of not rotation but vibration, or others, although diffusion material is driven, and a vibrator and a piezo fan using vibrator and an electrostriction component as the vibration can be used for it, for example.

[0038]

[Function] With the conventional technique which applies a wind to the support holding vaporization nature drugs, and is vaporized with a blower, although a wind speed etc. does not determine a mass transfer rate, the wind speed did not have it, either and all did not act effective in support as for airflow, [ so large ] Since said drugs are held directly or indirectly in this invention at diffusion material, for example, a fan etc., and this fan can enlarge rotational speed Since the front face of a fan with a contact rate it is more remarkable than the conventional technique, and is large, and large with air can be used, a mass transfer rate, as a result the amount of mass transfer can be enlarged remarkable. For this reason, in this invention, the diffusing capacity of said drugs can be enlarged and can be diffused very efficiently.

[0039] Moreover, if it carries out under heating conditions as mentioned above at that time, a diffusing capacity can be enlarged enough.

[0040]

[Example] Hereafter, an example explains this invention concretely. However, this invention is not limited only to these examples.

an example -- the blower which attached the fan of diameter 2.5cm four-sheet feather in the revolving shaft of the motor (rotational frequency 2100rpm) driven with an alkaline battery 1 C was constituted.

[0041] What has the class of base material for having the drugs indicated in Table 1 and 2 as this fan, and making it hold to that fan itself or fan was created.

[0042]

[Table 1]



表 1

No	薬剤有効成分		ファン自体、若しくはファンに 保持させるための基材		保持方法
	種 類 (重量部 : w/w%)		種 類 (重量部 : g)		
1	エムペンスリン	(10)	ポリ塩化ビニル製ファン	(1.8)	練込
2	"	(")	ポリエチレン製ファン	(1.8)	"
3	M-108A	(")	ポリプロピレン製ファン	(1.8)	"
4	" B	(")	KX-OA100~600製基材	(0.2)	貼着
5	エムペンスリン	(")	不織布製基材	(0.4)	"
6	"	(")	パルプ板製基材	(0.4)	"
7	M-108C	(")	テイジンオイルソルブ製基材	(0.2)	"
8	エムペンスリン	(")	ネオアタックエース製基材	(0.2)	"
9	"	(")	タフネスオイルプロッター製基材	(0.2)	"
10	"	(")	ウォセップ製基材	(0.2)	"

[0043]

[Table 2]

表 2

No.	薬剤有効成分	ファン自体、若しくはファンに 保持させるための基材	保持方法
	種 類 (重量部 : w/w%)	種 類 (重量部 : g)	
11	ディート (20)	ポリ塩化ビニル製基材 (0.2)	貼着
12	フェンフルスリン (10)	ポリエチレン製基材 (0.4)	"
13	DDVP (10)	ポリプロピレン製基材 (0.4)	"
14	ディート (30)	KX-OA100~600製基材 (0.2)	"
15	PCMX (20)	不織布製基材 (0.4)	"
16	エムベンスリン (10)	パルプ板製基材 (0.4)	"
17	フェンフルスリン (10)	テイジンオイルソルブ製基材 (0.2)	"
18	DDVP (10)	ネオアタックエース製基材 (0.2)	"
19	ディート (20)	タフネスオイルプロッター製基材 (0.2)	"
20	PCMX (20)	ウォセップ製基材 (0.2)	"
21	エムベンスリン (10)	エチレン-メチルメタクリレート 共重合体樹脂 (0.2)	練込

[0044] About "\*\*\*\*\*" of the maintenance approach, and "attachment", the following things are meant among the notes 1. table 1-2. "\*\*\*\*\*" says carrying out \*\*\*\*\* molding of the active principle with a conventional method to the material itself which constitutes the fan. "Attachment" means sticking on a fan the base material with which the active principle was held.

2. "weight section showing the addition of a drugs active principle : w/w %" shows weight % of the active principle contained in a fan or a base material.

as the fan of example 2 this invention -- the inside of 1.4g of polyvinyl chloride resin -- em penny phosphorus -- 10wt(s)% -- the activity trial to an insect was performed using the thing of the four-sheet feather (diameter of 2.5cm) cast from what was scoured.

The insect-killing activity trial volume to an insect is 3 0.012m. In a glass cylindrical tank (the bore of 23cm, height of 28.6cm) Place the cotton which infiltrated 50ml of \*\*\*\* into the bottom, and about 50 HOSHICHOUBAE imagos are offered as a sample. Equip the side face (from a top to 5cm) of the space with the blower which has the fan of this invention, it enabled it to rotate by 2100rpm by the motor which connects this with it, this was rotated, and drugs were diffused. However, opening of the above-mentioned tank is covered with a polyvinylidene chloride sheet, and it considers as a closed space.

[0045] The difference of the knockdown time amount of the HOSHICHOUBAE imago offered as a sample in space estimated the difference between vaporization and the diffusibility of the drugs in this trial. moreover, only what hung the fan (weight -- the same) holding drugs in the center of space as contrast was used. as a comparison -- the inside of 1.4g of polyvinyl chloride resin -- em penny phosphorus -- 10wt(s)% -- hang the plate fabricated from what was scoured near the side face of said space, assign the fan of this invention, and the fan made of the polyvinyl chloride resin of the same configuration in the same location as the fan of this invention, it is made to rotate by 2100rpm, and the ventilation was applied to said plate.

[0046] The test result is shown in Table 3.

[0047]

[Table 3]

表 3

	供 試 験 体		供試虫数	K T 9 0 (min)
	薬 剤 (重量%)	ファン樹脂重量 (g)		
本発明	エムペンスリン (10)	1. 4 0	5 6	4 0
対 照	" (10)	1. 4 0	5 7	3 0 0 ~ 3 3 0
比 較	" (10)	1. 4 0	4 8	8 0 ~ 9 0

注) K T 9 0 : 供試虫数の90%がノックダウンするに要する時間をいう。

[0048] According to this invention, by having made vaporization nature drugs hold directly to a fan shows that the knockdown time amount of HOSHICHOUBAE is shortened considerably and vaporization into the space of drugs and diffusibility are promoted so that clearly from the above-mentioned table 3.

The example 3 ethylene-methyl methacrylate copolymer resin (henceforth "EMMA resin") kneads a plasticizer dimethyl phthalate and em penny phosphorus, casts them in the shape of a sheet, cuts this sheet, and manufactures an em penny phosphorus content EMMA resin plate. Content was 9.6175 w/w% at the beginning [ of this resin plate ] of em penny phosphorus. The four above-mentioned plates were attached in the member which takes the lead in a fan as a blade (a wing, thickness of 1mm), and the fan (diameter of 4.6cm) who is diffusion material was created. The weight of this blade part was 1.7973g in total.

[0049] After rotating this fan for 30 days by the high rotation mold motor of rotational frequency 8,500rpm, when the acetone extracted on the 1st and the quantum of the em penny phosphorus was carried out with the gas chromatographic column, the total amount of vaporization was 21.9mg. Moreover, when rotating this fan by the low rotation mold motor of rotational frequency 2,130rpm, the total amount of vaporization of em penny phosphorus was about 15.9mg.

[0050] If it is made to drive by crawling motor like 400 which moves this fan by the dry cell - 800rpm, since there are few amounts of vaporization of em penny phosphorus, it is suitable for use of long duration in this case.

as the fan of example 4 this invention -- the inside of 10g of EMMA resin -- em penny phosphorus -- 10wt(s)% -- the four-sheet wing (2mm in thickness) cast from what was scoured, and the thing with a diameter of 8.0cm were used.

The doghouse (60x72x90cm) was placed in the space divided with the network of 3 (3x3x2.5m) insect-killing activity trial volume of 22.5m to a red house mosquito, the medium-sized mongrel was put in in this doghouse, and the wire gauze at which a red house mosquito can permeate was attached in the inlet port. And it equipped with the blower which has the fan of this invention who got in the example 4 to the doghouse top panel downward, this fan was rotated by about 2,000 pm(s), and drugs were diffused continuously. After being in this space and leaving sample offering \*\*\*\* from 17:00 till 9:00 of the next day, all sample offering insects were collected and it asked for the number of sucking-blood solid-states, and it was performed after progress on 0, 5, 11, and the 15th. The result is shown in Table 4. Moreover, as contrast, the fan of the isomorphism made of polyvinyl chloride resin which has not carried out drugs processing was rotated by about 2000 rpm.

[0051]

[Table 4]

表 4 経過日数に伴うアカイエカに対する吸血阻害効果

ファン回転 経過日数 (日)	アカイエカ雌 供試虫数	アカイエカ 吸血虫数	吸血率 (%)	吸血阻害率 (%)
0	1 0 3	1	1. 0	9 8. 8
5	1 3 9	1 4	1 0. 1	8 7. 6
1 1	8 6	1 5	1 7. 4	7 8. 8
1 5	9 4	3 1	3 3. 0	5 9. 8
無処理	1 9 6	1 6 1	8 2. 1	0

[0052] 10x10cm of cheesecloths is put on the base center section in the wardrobe of 3 (50x55x55cm) in piles example 5 volume of about 0.15m. Release ten third instar larvae and the acetone solution which dissolved about 16.5mg em penny phosphorus in the No.2 filter paper (ADVANTEC Oriental company make) in the total amount at the up top panel is sunk in. the inside of it -- a clothes moth -- Equip with the blower which has the fan (diameter of 9cm) who stuck on eight wings downward, and it enabled it to rotate by about 2000 rpm by the motor connected with it, and this was rotated, drugs were diffused, and the number of astonishment and fatal number of 44 hours after were measured at the room temperature. Moreover, as contrast, in the total amount, the No.2 filter paper which sank in about 490mg en penny phosphorus was installed in the same location as a blower, and was measured similarly. The result is shown in Table 5.

[0053]

[Table 5]

表 5

	致 死 数	致 死 率
本 発 明	7	7 0 %
対 照	3	3 0 %

[0054] Although 2 chip boxes of the sample offering film (4x10cm) of the class shown in example 6 Table 6 and 7 were carried out, oil absorption material (0.08-0.4g) (all show in Table 6 and 7) is put in about 1.0-2.0g vaporization nature drugs and if needed in between. These inclusion bodies in the configuration given in drawing 1 which produced the vaporization nature drugs inclusion body which heat sealed the perimeter, and was attached to the motor The bore of 3.3cm, It equipped in the shape of a cylinder along the interior of a fan which is the outer diameter of 4.7cm, height of 2.2cm, and the weight of 5.3g, and the drugs diffusion material of this invention shown in Table 6 and 7 was obtained. In addition, the film "D2021" of front Naka etc. is the ethylene vinyl acetate polymer mentioned above.

[0055]

[Table 6]

表 6

試料 No	フィルム 種類 (重量部)	揮 散 性 薬 剤				吸 油 材 種類 (重量部)	モ ー タ ー
		有効成分 種類 (重量部)	溶 剤 種類 (重量部)	そ の 他 種類 (重量部)			
1	D2021 (0.2)	エムベスリッ (1.0)	—	—	KX-0A400 (0.08)	ナショナル 4RAETA	
2	K2010 (0.2)	" (1.0)	—	—	KX-0A400 (0.11)	"	
3	D2021 (0.3)	" (1.0)	—	—	—	"	
4	ベト&スモークフィルム (1.9)	" (1.0)	—	—	—	"	
5	H2020 (0.3)	" (1.5)	—	—	KX-0A400 (0.3)	"	
6	K2010 (0.3)	" (1.5)	—	—	KX-0A400 (0.3)	"	
7	K2010 (0.3)	" (2.0)	—	—	KX-0A400 (0.4)	"	
8	K2010 (0.4)	" (2.0)	—	—	KX-0A400 (0.4)	RF330TF 07500	
9	K2010 (0.4)	" (2.0)	—	—	脱脂綿 (0.165)	RF330TF 07800	

[0056]

[Table 7]

表 7

試料 No	フィルム 種類 (重量部)	揮 散 性 薬 剤			吸 油 材 種類 (重量部)	モ ー タ ー
		有効成分	溶 剤	そ の 他		
1 0	ペントモークリウム (0.8)	エムペンリウム (1.0)	灯油 (0.5)	—	—	RF330TK 07800
1 1	D2021 (0.3)	エムペンリウム (1.5)	—	PCMX (0.5)	KX-0A400 (0.3)	マブチ FA-130
1 2	K2010 (0.3)	" (1.5)	—	—	" (0.3)	"
1 3	H2020 (0.3)	" (1.5)	—	—	" (0.3)	"
1 4	K2010 (0.3)	M-105B (1.5)	—	—	" (0.3)	"
1 5	H2020 (0.3)	" (1.5)	—	—	" (0.3)	"
1 6	エチルセロソル (0.3)	PCMX (2.0)	—	—	—	"
1 7	ポリメチルシロキサン (0.5)	DEEP (2.0)	—	—	—	"
1 8	微多孔性フィルム (0.5)	DDVP (2.0)	—	—	KX-8A600 (0.4)	"

[0057] Used sample No.1-10 of the example of trial 1 above-mentioned example 6, the thing of the above-mentioned sample was made to drive by the motor written together to Table 6 and 7, the gravimetry of a vaporization nature drugs inclusion body was performed with time, and the weight decrement was made into the amount of em penny phosphorus vaporization. The obtained measurement result is shown in drawing 5 thru/or drawing 7. In addition, the aforementioned motor uses what is driven by the single dry cell, in each drawing, the loss of power of the motor accompanying the sag of a single dry cell occurs with F, that it is with S shows the time of a halt of the motor accompanying consumption of said dry cell, and that it is with C shows the time of exchange of said dry cell.

[0058] In drawing 5 -7, an axis of ordinate shows inclusion body weight, and an axis of abscissa shows drive days. In drawing 5, "-" shows sample No.1, "O" shows change of the inclusion body weight of sample No.2, and it sets to drawing 6. "-" shows sample No.3, "O" shows change of the inclusion body

weight of sample No.10, and in drawing 7, in "\*\*\*\*", sample No.7 and "\*\*\*\*" show sample No.8, and, as for sample No.5 and "-", "\*\*\*\*" shows change of the inclusion body weight of sample No.9, as for sample No.6 and "O."

The glass greenhouse changed into the effect test ventilation condition over the mosquito (a red house mosquito, *Homo sapiens* SUJISHISUKA) in an example of trial 2 outdoor doghouse (3.5m long) The wooden gage which put in the medium-sized mongrel in the side of 2.5m and height of 3m was placed, the sample offering insect (a red house mosquito, *Homo sapiens* SUJISHISUKA) was released in the glass greenhouse, and the sample offering fan containing em penny phosphorus was installed in the head-lining section in a doghouse, about 2 - 3 hours before releasing a sample offering insect. However, the mongrel made the doghouse the condition of having shut up, and the doghouse inlet port stretched the wire gauze so that a mosquito might pass freely.

[0059] In the case of the red house mosquito, it pastured in the evening around 6 [ five - ]:00, it collected all solid-states in the next morning around 9:00, and investigated the rate of sucking blood. Moreover, it examined in the daytime, in *Homo sapiens* SUJISHISUKA, 4 hours after pasturing, all solid-states were collected, and it investigated the rate of sucking blood. A measurement result is shown in Table 8.

According to this table 8, it is clear this invention approach's to have the very high prevention effectiveness.

[0060]

[Table 8]

表 8 効力試験結果

	供試昆虫	供試ファン	1日当りの 蒸散量(mg)	雌捕獲 虫 数	吸血虫数	吸血率 (%)	補正吸血率 (%)
本発明	アカイエカ	VEP 2.5g RF-330モーター	41.83	35	5	14.3	18.5
"	"	" 4RA3ETA モーター	60.07	68	0	0	0
"	"	" "	49.38	138	5	3.6	4.7
比 較	"	無処理	—	67	52	77.6 平均 77.2	100
"	"	"	—	116	89	76.7	100
本発明	ヒトスジシマカ	VEP 2.5g RF-330モーター	85.29	38	1	2.6	3.8
"	"	" "	30.65	38	1	2.6	3.8
"	"	" "	44.09	10	1	10.0	14.6
比 較	"	無処理	—	73	71	97.3 平均 68.7	100
"	"	"	—	40	16	40.0	100

注) VEP : エムペンスリン

[0061]

[Effect of the Invention] This invention can enlarge the diffusing capacity of vaporization nature drugs

remarkable by making vaporization nature drugs hold in diffusion material directly and/or indirectly, and making it drive them. For this reason, it can be efficiently used into a larger mind. Moreover, it is sufficient even if it uses the blower driven by the motor which can carry out using a smaller blower, for example, uses a dry cell as a power source to the usual sitting-room as compared with the conventional method of applying the wind of a blower to the support which supported vaporization nature drugs, since diffuser efficiency is good.

[0062] Furthermore, it can carry out by carrying out the preheating of the air introduced by the heating means to a driving means, and/or heating the diffusion material itself to enlarge the diffusing capacity of the vaporization nature drugs more. The amount of vaporization in that case is quite larger than the case where the conventional support is only being heated. moreover, when making the diffusion material made to drive there, for example, the base material which contains vaporization nature drugs on a fan's front face, and a vaporization nature drugs inclusion body support If these base materials etc. are supplied to exchange and it is supplied to drugs, use will be possible succeedingly, and the fan itself -- or since it can be succeedingly used if the fan itself or its part is exchanged when constituted from an ingredient containing vaporization nature drugs, such as the wing, for example, synthetic resin, practicality is high.

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[Translation done.]



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CLAIMS

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[Claim(s)]

[Claim 1] The diffusion approach of the vaporization nature drugs characterized by diffusing vaporization nature drugs in mind by making the diffusion material holding vaporization nature drugs drive by the driving means.

[Claim 2] The diffusion approach of the vaporization nature drugs according to claim 1 characterized by heating the air introduced into said diffusion material and/or it.

[Claim 3] Drugs diffusion material for diffusing vaporization nature drugs in mind by drive characterized by making vaporization nature drugs hold on the interior and/or its front face.

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[Translation done.]

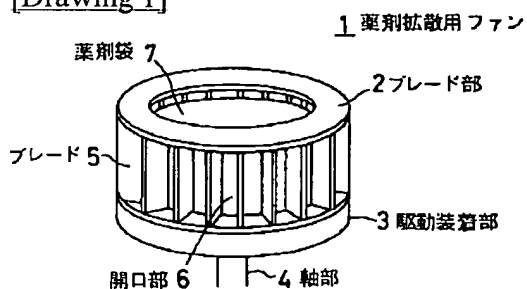
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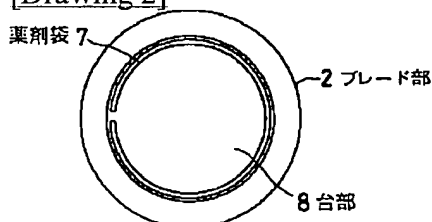
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## DRAWINGS

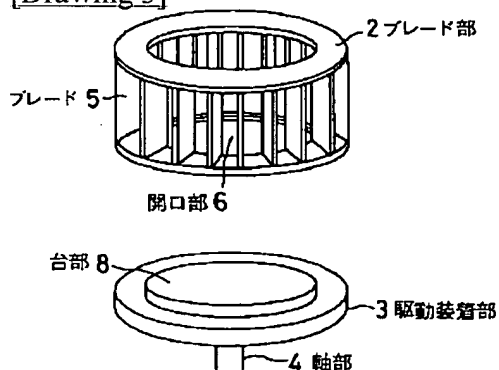
[Drawing 1]



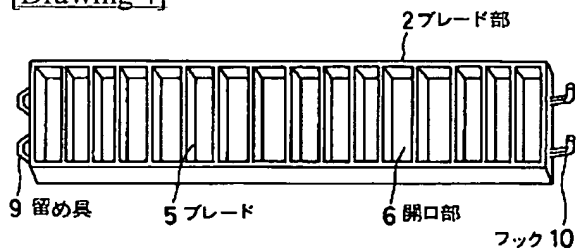
[Drawing 2]



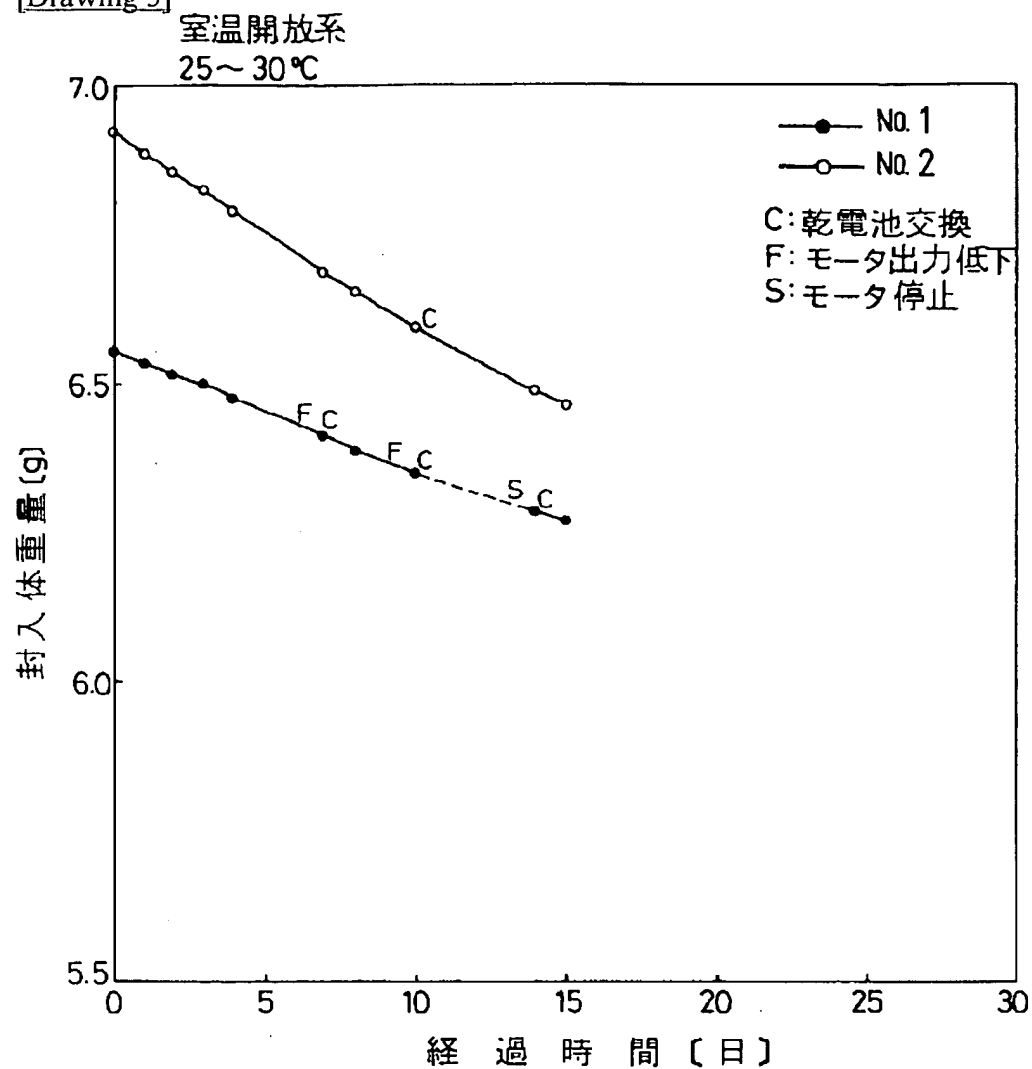
[Drawing 3]



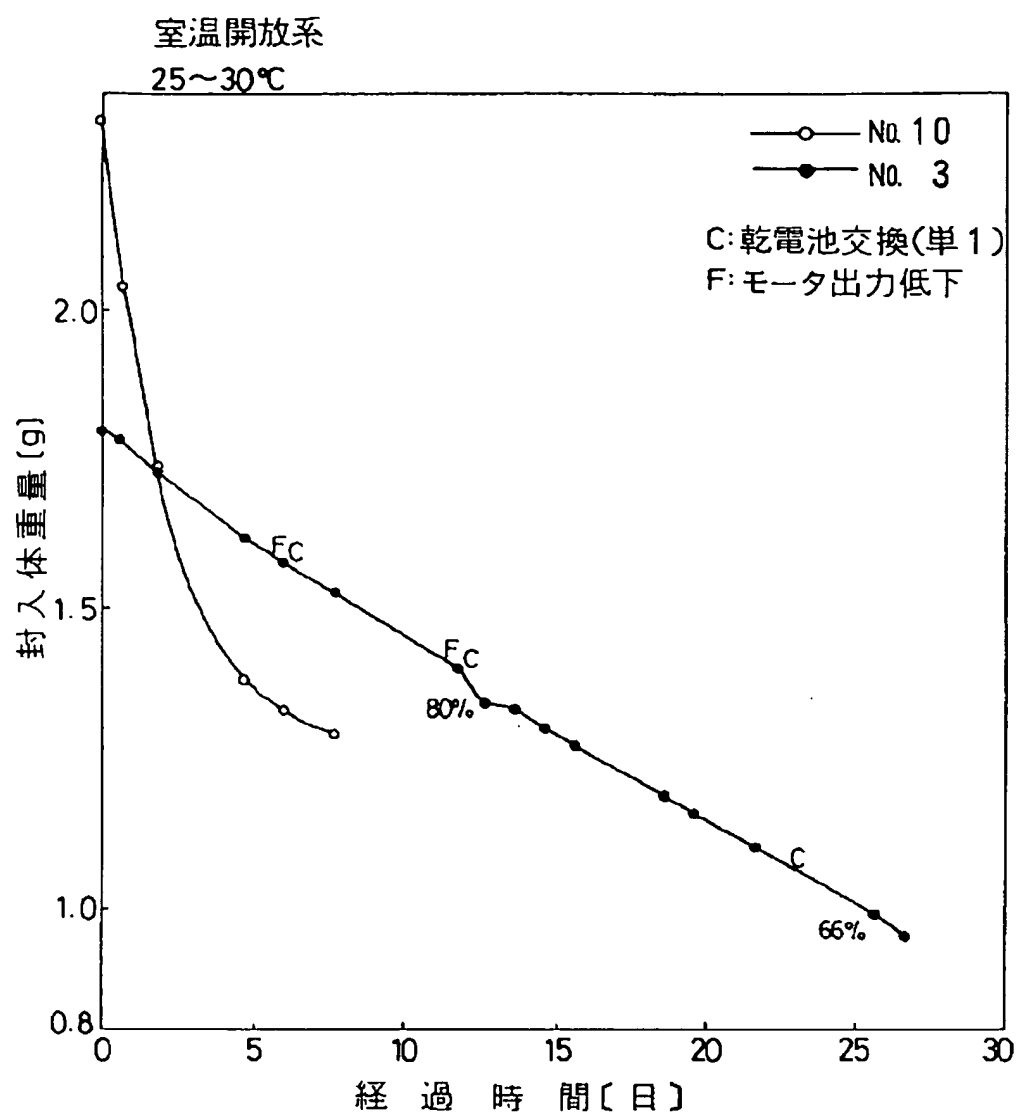
[Drawing 4]



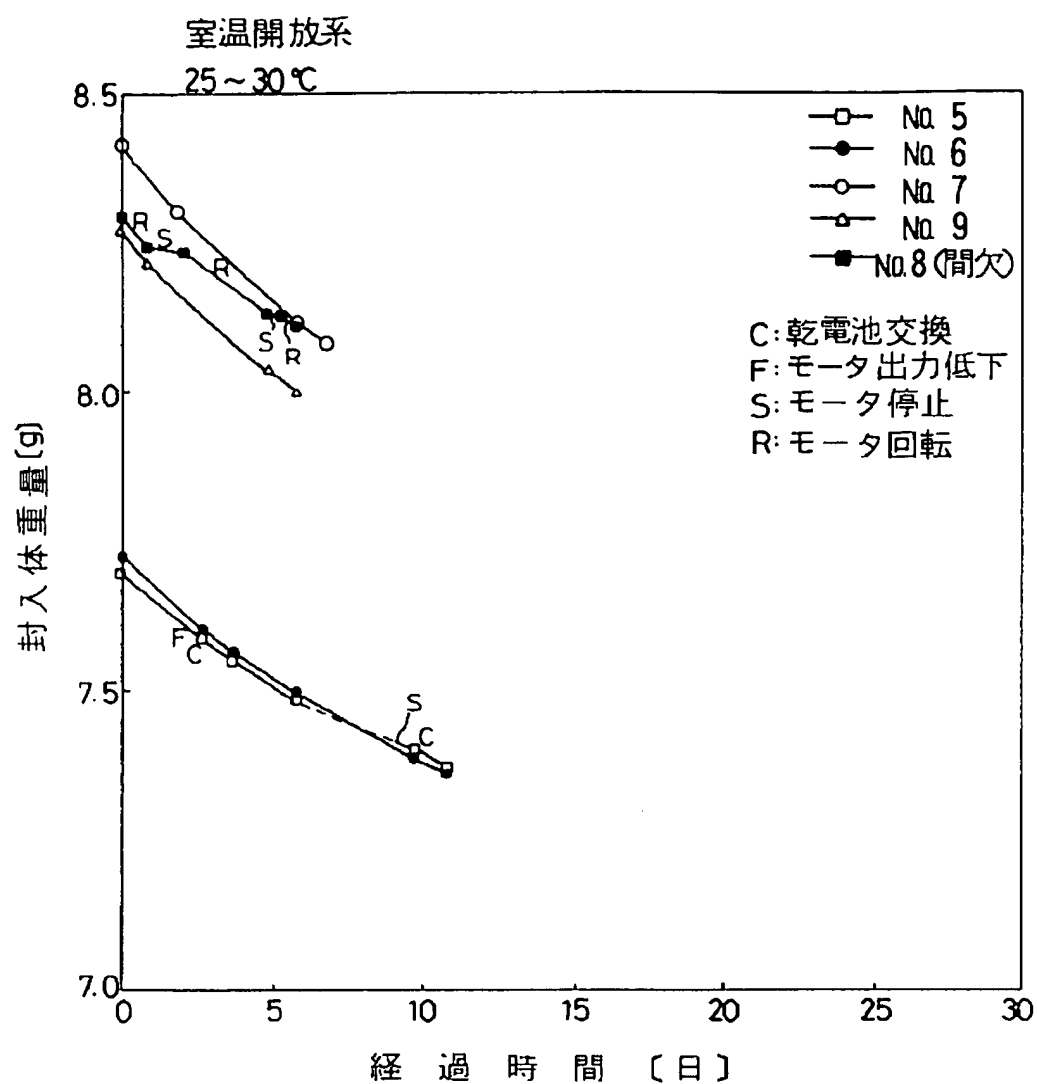
[Drawing 5]



[Drawing 6]



[Drawing 7]



[Translation done.]